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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/684,488	10/04/2000	Bin Zhang	10992482-1	3131

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EXAMINER	
HAMILTON, MONPLAISIR G	

ART UNIT	PAPER NUMBER
2172	11

DATE MAILED: 01/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/684,488	ZHANG ET AL.	
	Examiner	Art Unit	
	Monplaisir G Hamilton	2172	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/29/03*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-30* is/are pending in the application.

4a) Of the above claim(s) *1-20* is/are cancelled.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *21-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. The communication filed on 10/29/03, cancelled Claims 1-20 and added Claim 21-30. Claims 21-30 remain for examination.

Information Disclosure Statement

2. The listing of references in the specification, page 2, lines 1-10, is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered. These references should be submitted along with a PTO-1449 Form.

Claim Rejections - 35 USC § 112

3. Claims 21-30 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted element is: the predetermined metric. Applicant's specification alludes to the use of a predetermined metric (page 14, lines 15-20). However, the claims presented by applicant do not sufficiently define the predetermined metric or how the computer uses the predetermined metric to "determine whether the clustered results are satisfactory". Furthermore, applicant has omitted the claimed expression, in Claims 29. Therefore, applicant

has presented claims defining a computer-implemented program that continuously executes, i.e. infinite iterations. Examiner has interpreted the claimed predetermined metric to be the size of the cluster in view of Techniques for Improving Multi-partitioning Algorithm, IBM Technical Disclosure, 1993, . Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 21-22, 27 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by NN9301473, IBM Technical Disclosure Bulletin, herein referred to as IBM (1/ 1/1993).

Referring to Claim 21:

IBM discloses a system for clustering data comprising: a computer executing a computer program performing at the following steps:

(a) receiving into the computer a plurality of data points for clustering (page 1, lines 5-10);

(b) receiving into the computer a size parameter for specifying the number of data points to be moved at one time (page 4, lines 10-30);

(c) clustering the data points by using the size parameter to generate clustered results (page 4, lines 22-30);

(d) determining whether the clustered results are satisfactory (page, lines 15-20);

(e) when the clustered results are satisfactory, stop clustering (page 4, lines 30-33);

(f) otherwise when the clustered results are not satisfactory, revise the size parameter, perform clustering based on the revised size parameter and the clustered results, and proceed to step (d) (page 4, lines 25-30).

Referring to Claim 22:

IBM discloses the limitations as discussed in Claim 21 above. IBM further discloses wherein step (c) of the computer program further comprises:

(c1) evaluating subsets of data points in each cluster for moving into every other cluster by using a predetermined metric; wherein the number of data points in the subset is specified by the size parameter (page 6, lines 1-10).

Referring to Claim 27:

IBM discloses the limitations as discussed in Claim 21 above. IBM further discloses revising the size parameter of step (f) further comprises (f_1) decreasing the size parameter (page 4, lines 25-30).

Referring to Claim 30:

IBM discloses the limitations as discussed in Claim 21 above. IBM further discloses wherein the system is utilized in one of a data mining application, customer segmentation application, document categorization application, scientific data analysis application, data compression application, vector quantization application, and image processing application (page 1, lines 1-5).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 23-26 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over NN9301473, IBM Technical Disclosure Bulletin, herein referred to as IBM(1/1/1993) in view of US 6092072 issued to Guha, herein referred to as Guha .

Referring to Claim 23:

IBM discloses the limitation as discussed in Claim 22 above.

IBM does not explicitly disclose "(c1_1) determining a geometric center of the subset of data points being evaluated for a move; (c1_2) using the geometric center of the subset of data points in the predetermined metric to generate a value."

Guha discloses (c1_1) determining a geometric center of the subset of data points being evaluated for a move (col 6, lines 50-65; col 7, lines 20-25); (c1_2) using the geometric center of the subset of data points in the predetermined metric to generate a value (col 9, lines 30-55).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the teachings of IBM such that it determined a geometric mean as a criteria for the clustering algorithm. One of ordinary skill in the art would have been motivated to do this because it would decrease the number of data points that would be evaluated (Guha:

col 9, lines 35-60). IBM expressly states that other clustering algorithms may be used (IBM: page 3, lines 5-10).

Referring to Claim 24:

IBM in view of Guha discloses the limitations as discussed in Claim 23 above. Guha further discloses

(cl_3) determining whether the value is greater than zero (col 9, lines 50-55);

(c1_4) when the value is greater than zero, moving the subset of data points from a Move_From cluster to a Move_To cluster (col 9, lines 55-65);

(c1_5) when the value is not greater than zero, determining if there are more subsets to evaluate (col 10, lines 23-26);

(cl_6) when there are more subsets to evaluate, proceeding to step (c1) (col 9, lines 55-65);

(c1_7) when there are no more subsets to evaluate, determining whether any point has moved (col 10, lines 15-30);

(c1_8) when a point has moved, proceeding to step (c1) (col 9, lines 55-65); and

(c1_9) when no point has moved, stopping the processing (col 9, lines 25-35).

Referring to Claim 25:

IBM in view of Guha discloses the limitations as discussed in Claim 24. Guha further discloses wherein each data has a membership with one cluster (col 6, lines 50-65); and wherein step (c1_4) of the computer program further comprises: simultaneously updating the membership

of at least two data points from the membership of the Move_From cluster to the membership of the Move_To cluster (col 10, lines 4-50).

Referring to Claim 26:

IBM in view of Guha discloses the limitations as discussed in Claim 24. Guha further discloses updating the count of the Move_From cluster (col 9, lines 60-65; col 10, lines 23-26); updating the center of the Move_From cluster (col 9, lines 35-45; col 10, lines 35-50); updating the count of the Move_To cluster (col 10, lines 14-20; updating the center of the Move_To cluster (col 9, lines 35-46).

Referring to Claim 28:

IBM discloses the limitation as discussed in Claim 21 above.

IBM does not explicitly discloses "(d_1) employing a predetermined metric for determining whether the clustered results are satisfactory; wherein the predetermined metric includes a geometric center of the subset of points that are being evaluated for move."

Guha discloses (d_1) employing a predetermined metric for determining whether the clustered results are satisfactory, wherein the predetermined metric includes a geometric center of the subset of points that are being evaluated for move (col 9, line 30-col 10, line 50).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the teachings of IBM such that it determined a geometric mean as a criteria for the clustering algorithm. One of ordinary skill in the art would have been motivated to do this because it would decrease the number of data points that would be evaluated (Guha:

col 9, lines 35-60). IBM expressly states that other clustering algorithms may be used (IBM: page 3, lines 5-10).

Referring to Claim 29:

IBM in view of Guha discloses the limitations as disclosed in Claim 28 above. Guha further discloses the predetermined metric of step (d_1) of the computer program comprises the following expression:

where U is the subset of data points being evaluated for the move, |U| is the size of U that is specified by the size parameter, m_∞ is the geometric center of U, M_i and m_j are the centers of the clusters and n_i and n_j are the counts of the clusters (col 12, lines 40-65).

Prior Art

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 5970495 issued to Baru, Chaitanya K. et al. Baru discloses his invention provides a method and apparatus for distributing data of a table substantially uniformly across a parallel database system having a plurality of interlinked database nodes. Data of the table is distributed across a group of nodes (nodegroup) in accordance with a partitioning arrangement. Resource loading, for example, the workload or storage volume of the nodes is monitored. Data is moved from one or more nodes having higher resource loading to nodes having lower resource loading to achieve a substantially uniform distribution of the resource loading across the group of nodes

concerned. In the course of moving data the selection of groups of data to be moved is performed in a manner to reduce the amount of data movement.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monplaisir G Hamilton whose telephone number is 1703-305-5116. The examiner can normally be reached on Monday - Friday (8:00 am - 4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E Breene can be reached on 1703-305-9790. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 1703-305-3900.

Monplaisir Hamilton

JEAN M. CORRIELUS
PRIMARY EXAMINER